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| 10/708,799 | 03/26/2004 | Wei-Guan YAU | MTKP0150USA | 2798 |

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| EXAMINER | |
|---|---|
| WEST, JEFFREY R | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2857 | |

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/708,799 | YAU, WEI-GUAN | |
| | Examiner | Art Unit | |
| | Jeffrey R. West | 2857 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *15 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *7,8,10,24,25 and 27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9,11-23,26 and 28-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

1. In response to the election requirement made October 04, 2005, Applicant has elected the species corresponding to "A first embodiment for calculating a ratio of an actual time interval to a predetermined time interval, as best illustrated in paragraph 0031, lines 6-11" and therefore has not elected the species corresponding to "A second embodiment for calculating a ratio of an actual time interval to a predetermined time interval, as best illustrated in paragraph 0031, lines 11-18".

The second embodiment as best illustrated in paragraph 0031, lines 11-18 is described as "other embodiments of the invention may choose to use floating point notation for representing numbers. In this case, the closest integer value of the ratio will not be used as the value of the ratio; instead the decimal notation of the ratio will be used, the accuracy dependent on the user's selection. For example, if the ratio again were 5:2, then 2.5 would be used as the ratio value".

The Examiner asserts that this second non-elected embodiment corresponds to claims 7 and 24 and therefore claims 7 and 24 have been withdrawn from consideration.

### *Specification*

2. The disclosure is objected to because of the following informalities:

In paragraph 0034, lines 21-22, reference is made to the step for setting the threshold value TH as "step 120" while Figure 3 illustrates this step as "110".

Appropriate correction is required.

***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-6, 9, and 11-17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter, specifically, non-statutory process claims.

35 U.S.C. 101 requires that the claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)).

It has also been held that a process that consists solely of the manipulation of an abstract idea is not concrete or tangible. See In re Warmerdam, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). See also Schrader, 22 F.3d at 295, 30 USPQ2d at 1459.

Claims 1-6, 9, and 11-17 are not claimed as statutory subject matter because the claimed method only carries out the manipulation of threshold values. This manipulation of threshold values is only a starting point for any implementation of the thresholds and is furthermore a manipulation of abstract ideas without producing a concrete and tangible result.

Applicant's attention is further directed to MPEP § 2106 with respect to the examples of claimed processes that do not achieve a practical application, specifically, the discussion regarding a step of "updating alarm limits" found to constitute changing the number value of a variable to represent the result of the calculation (Parker v. Flook, 437 U.S. 584, 585, 198 USPQ 193, 195 (1978))

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 20 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 is considered to be vague and indefinite because it refers to "the counting module" and "the decision logic" while there is no previous mention of any "counting module" or "decision logic". Therefore, it is unclear to one having ordinary skill in the art as to what module "the counting module" refers and to what logic "the decision logic" refers.

Claim 32 is similarly considered to be vague and indefinite because it refers to "the decision logic" while there is no previous mention of any "decision logic". Therefore, it is unclear to one having ordinary skill in the art as to what logic "the decision logic" refers.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 5, 12, 18-20, 22, and 29, as may best be understood, are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,084,441 to Kawai.

With respect to claim 1, Kawai discloses a method for dynamically compensating for the imprecision of a timer, the timer repeatedly triggering a reference event according to a predetermined time interval (column 7, lines 30-38 and column 8, lines 25-46), the method comprising the steps of storing a threshold value (i.e. numerical limit value) (column 9, lines 48-52), storing a count value corresponding to a plurality of reference events generated from the timer (i.e. count of clock pulses) (column 9, lines 59-61), tracking an actual time interval between a first reference event and a second reference event occurring after the first reference event (column 7, lines 54-55 and 59-64 and column 8, lines 7-8), calculating a compensation value from the predetermined time interval and the actual time interval (column 8, lines 5-

10), and utilizing the compensation value for reducing a difference between the count value and the threshold value (column 10, lines 4-22).

With respect to claim 2, Kawai discloses generating an acknowledgement event if the count value reaches the threshold value (column 10, lines 24-28).

With respect to claim 3, Kawai discloses that the step of tracking the actual time interval further comprises tracking the actual time interval between every two adjacent reference events (column 7, lines 59-64 and column 9, lines 16-19).

With respect to claim 5, Kawai discloses that the step of calculating the compensation value further comprises determining the compensation value by calculating a ratio of the actual time interval to the predetermined time interval (column 8, lines 5-10).

With respect to claim 12, Kawai discloses that the reference events are system interrupts (column 7, lines 59-64).

With respect to claim 18, Kawai discloses a timer system comprising a timer for repeatedly triggering a reference event according to a predetermined time interval (column 7, lines 30-38 and column 8, lines 25-46), a first storage unit for storing a preset threshold value (column 9, lines 48-52 and 59-61), a second storage unit for storing a count value corresponding to a plurality of reference events generated from the timer (column 9, lines 59-61), a tracking module electrically connected to the timer for tracking an actual time interval between a first reference event and a second reference event occurring after the first reference event (column 7, lines 54-55 and 59-64 and column 8, lines 7-8), a calculating module electrically connected to

the tracking module for calculating a compensation value from the predetermined time interval and the actual time interval (column 8, lines 5-10), and a compensating module electrically connected to the calculating module and at least one of the first and second storage units for reducing a difference between the count value and the threshold value (column 10, lines 4-22).

With respect to claim 19, Kawai discloses a decision logic inherently electrically connected to the first and second storage units for generating an acknowledgement event if the count value reaches the threshold value (i.e. comparing the stored count value to the corrected and stored threshold value) (column 10, lines 24-28).

With respect to claim 20, Kawai discloses that the first and second storage units, the counting module, the calculating module, compensating module, and the decision logic are positioned within a microprocessor, and the timer is driven by the microprocessor (column 7, lines 30-58 and Figure 2).

With respect to claim 22, Kawai discloses that the compensating module determines the compensation value by calculating a ratio of the actual time interval to the predetermined time interval (column 8, lines 5-10).

With respect to claim 29, Kawai discloses that the reference events are system interrupts of the timer system (column 7, lines 59-64).

9. Claims 13, 15, 17, 30, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,903,251 to Chapman.

With respect to claim 13, Chapman discloses a method for dynamically compensating for the imprecision of a timer, the timer repeatedly triggering a reference event (column 3, line 64 to column 4, line 19), the method comprising the steps of storing a threshold value (column 5, lines 1-2) and a count value (column 5, lines 52-53), tracking an actual time interval between every two reference events (column 5, lines 27-32), and updating the count value by a value calculated through accumulating a plurality of actual time intervals corresponding to a plurality of reference events (column 5, lines 27-37 and column 6, lines 1-5).

With respect to claim 15, Chapman discloses that the step of tracking the actual time interval further comprises tracking the actual time interval between every two adjacent reference events (column 5, lines 27-32).

With respect to claim 17, Chapman discloses that the reference events are system interrupts (column 3, lines 64-68).

With respect to claim 30, Chapman discloses a timer system comprising a timer for repeatedly triggering a reference event (column 3, line 64 to column 4, line 19), a first storage unit (i.e. register) for storing a threshold value (column 5, lines 1-2), a second storage unit (i.e. register) for storing a count value (column 4, lines 63-64 and column 5, lines 52-53), a tracking module electrically connected to the timer for tracking an actual time interval between every two reference events (column 5, lines 27-32), and a calculating module electrically connected to the tracking module for updating the count value by a value calculated through accumulating a plurality of

actual time intervals corresponding to a plurality of reference events (column 5, lines 27-37 and column 6, lines 1-5 and Figure 2).

With respect to claim 34, Chapman discloses that the reference events are system interrupts of the timer system (column 3, lines 64-68).

Chapman also discloses that the tracking module comprises a clock generator for generating a reference clock, and the tracking module utilizes the reference clock for computing a time value corresponding to the actual time interval between every two adjacent reference events (column 4, lines 20-29, column 5, lines 27-32 and Figure 2).

Chapman further discloses that the first storage unit, the second storage unit, and the calculating module, are positioned within a microprocessor, and the timer is driven by the microprocessor (column 4, lines 20-51 and Figure 2).

### *Claim Rejections - 35 USC § 103*

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 16 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman in view of U.S. Patent No. 3,889,189 to Lode.

As noted above, Chapman teaches many of the features of the claimed invention and while Chapman does teach that the tracking module comprises a clock generator for generating a reference clock, and the tracking module utilizes the reference clock for computing a time value corresponding to the actual time interval between every two adjacent reference events (column 4, lines 20-29, column 5, lines 27-32 and Figure 2), and while one having ordinary skill in the art would understand the necessity to reset a time value before measuring subsequent time intervals, Chapman does not explicitly teach this feature.

Lode teaches a digital time measurement system comprising a counter for tracking an actual time interval including a method for resetting an existing time value before tracking the actual time interval (column 60, lines 51-56).

It would have been obvious to one having ordinary skill in the art to modify the invention of Chapman to explicitly teach resetting the time value before tracking an actual time interval, as taught by Lode, because, as suggested by Lode and considered well-known in the art, the combination would have insured that the newly measured interval is accurate by clearing any time value remaining from a previously measured interval which would skew results (column 60, lines 51-56).

12. Claims 1-3, 5, 9, 11-15, 17-20, 22, 26, 28-32, and 34, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,896,321 to Kawahara in view of U.S. Patent No. 4,903,251 to Chapman.

Kawahara discloses a self-monitoring system including a timer for determining the processing time of a unit (abstract), the timer/counter repeatedly triggering a reference event according to a predetermined time interval (column 3, lines 31-35), the method comprising the steps of storing a threshold value (column 3, lines 1-4), storing a count value corresponding to a plurality of reference events generated from the timer/counter (column 2, lines 5-8 and 42-44), and generating an acknowledgement event if the count value reaches the threshold value (column 3, lines 1-4 and 15-20).

Kawahara discloses that the reference events are system interrupts (column 3, lines 31-35).

Kawahara further discloses a decision logic electrically connected to the first and second storage units for generating an acknowledgement event (i.e. alarm) if the count value reaches the threshold value (column 3, lines 1-4 and 15-20 and Figure 1).

As noted above, the invention of Kawahara teaches acknowledging when a number of counted interrupts reaches a predetermined threshold with the interrupts being reference events triggered according a predetermined frequency (column 3, lines 31-35). Kawahara, however, does not include a corresponding method for correcting the number of counted interrupts.

Chapman teaches a method for dynamically compensating for the imprecision of a timer, the timer repeatedly triggering a reference event (column 3, line 64 to column 4, line 19), the method comprising the steps of storing a count value (column

5, lines 52-53), tracking an actual time interval between every two reference events (column 5, lines 27-32), and updating the count value by a value calculated through accumulating a plurality of actual time intervals corresponding to a plurality of reference events (column 5, lines 27-37 and column 6, lines 1-5).

Chapman teaches calculating a compensation value from the predetermined time interval and the actual time interval wherein calculating a compensation value further comprises determining the compensation value by calculating a ratio of the actual time interval to the predetermined time interval (column 5, lines 27-37).

Chapman teaches that the step of utilizing the compensation value comprises adding the compensation value to the count value (column 6, lines 1-5) or subtracting the compensation value from the count value (i.e. adding a negative) without adjusting a threshold voltage (column 6, lines 31-34).

Chapman teaches that the step of tracking the actual time interval further comprises tracking the actual time interval between every two adjacent reference events (column 5, lines 27-32).

Chapman teaches that the reference events are system interrupts (column 3, lines 64-68).

Chapman teaches a timer system comprising a timer for repeatedly triggering a reference event (column 3, line 64 to column 4, line 19), a storage unit (i.e. register) for storing a count value (column 4, lines 63-64 and column 5, lines 52-53), a tracking module electrically connected to the timer for tracking an actual time interval between every two reference events (column 5, lines 27-32), and a calculating

module electrically connected to the tracking module for updating the count value by a value calculated through accumulating a plurality of actual time intervals corresponding to a plurality of reference events (column 5, lines 27-37 and column 6, lines 1-5 and Figure 2).

Chapman teaches that the reference events are system interrupts of the timer system (column 3, lines 64-68).

Chapman also teaches that the tracking module comprises a clock generator for generating a reference clock, and the tracking module utilizes the reference clock for computing a time value corresponding to the actual time interval between every two adjacent reference events (column 4, lines 20-29, column 5, lines 27-32 and Figure 2).

Chapman further teaches that the storage unit, counting module, calculating module, and compensating module, are positioned within a microprocessor, and the timer is driven by the microprocessor (column 4, lines 20-51 and Figure 2).

It would have been obvious to one having ordinary skill in the art to modify the invention of Kawahara to include a corresponding method for correcting the number of counted interrupts, as taught by Chapman, because, as suggested by Chapman, the combination would have improved the accuracy of the invention of Kawahara by correcting the interrupt count determined by the interrupt processing units of Kawahara through the application of a compensation value to account for frequency errors (column 1, lines 6-17 and 30-35).

Further, since the invention of Kawahara teaches counting the number of interrupts until the count value reaches an alarm threshold and the invention of Chapman teaches correcting the number of counted interrupts to account for timing drift by adding and/or subtracting a compensation value to the count value, without adjusting a threshold voltage, the combination would have utilized the compensation value for reducing a difference between the count value and the threshold value by adding and/or subtracting the compensation value when the threshold value is less than/greater than the count value.

Further still, since the invention of Kawahara teaches a decision logic electrically connected to the first and second storage units for generating an acknowledgement event (i.e. alarm) if the count value reaches the threshold value and the invention of Chapman teaches that the storage unit, counting module, calculating module, and compensating module are positioned within a microprocessor, the combination would have also included the decision logic and other storage units positioned within the microprocessor.

13. Claims 4, 16, 21, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara in view of Chapman and further in view of U.S. Patent No. 3,889,189 to Lode.

As noted above, the invention of Kawahara and Chapman teaches many of the features of the claimed invention and while the invention of Kawahara and Chapman does teach that the tracking module comprises a clock generator for generating a

reference clock, and the tracking module utilizes the reference clock for computing a time value corresponding to the actual time interval between every two adjacent reference events (Chapman; column 4, lines 20-29, column 5, lines 27-32 and Figure 2), and while one having ordinary skill in the art would understand the necessity to reset a time value before measuring subsequent time intervals, the combination does not explicitly teach this feature.

Lode teaches a digital time measurement system comprising a counter for tracking an actual time interval including a method for resetting the time value before tracking the actual time interval (column 60, lines 51-56).

It would have been obvious to one having ordinary skill in the art to modify the invention of Kawahara and Chapman to explicitly teach resetting the time value before tracking an actual time interval, as taught by Lode, because as suggested by Lode, and considered well known in the art, the combination would have insured that the newly measured interval is accurate by clearing any time value remaining from a previously measured interval which would skew results (column 60, lines 51-56).

14. Claims 6 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara in view of Chapman and further in view of U.S. Patent No. 4,374,358 to Hirose.

As noted above, the invention of Kawahara and Chapman teaches many of the features of the claimed invention and while the invention of Kawahara and Chapman does teach determining a compensation value as a ratio of the actual time interval

and the predetermined time interval (Chapman; column 5, lines 28-36) and applying the compensation value to the count value wherein the count value is an integer (Chapman, column 6, lines 1-5), the combination does not explicitly include calculating the compensation value as an integer closest to the ratio.

Hirose teaches an apparatus for measuring the oscillation frequency of a voltage controlled oscillator comprising means for multiplying a counter value by a ratio wherein the ratio is obtained and rounded to a closest integer before multiplying (column 3, lines 42-51).

It would have been obvious to one having ordinary skill in the art to modify the invention of Kawahara and Chapman to explicitly include calculating the compensation value as an integer closest to the ratio, as taught by Hirose, because the combination of Kawahara and Chapman does teach applying the compensation value to the count value wherein the count value is an integer and Hirose suggests that the combination would have provided a sufficiently accurate count value while still obtaining a count value that is a whole number as is expected with regard to interrupt counts and count values in general (column 3, lines 42-51).

## ***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure:

U.S. Patent No. 6,397,283 to Ting teaches a method of automatically adjusting interrupt frequency.

U.S. Patent No. 6,981,165 to Marik teaches a method and apparatus for handling an interrupt from a real-time clock to increment a program clock.

U.S. Patent No. 5,392,435 to Masui et al. teaches a microcomputer having a system clock frequency that varies in dependence on the number of nested and held interrupts.

U.S. Patent No. 5,535,380 to Bergkvist, Jr. et al. teaches a system to reduce latency for real time interrupts.

U.S. Patent No. 4,093,873 to Vannier et al. teaches a method for compensating digital counters for quartz crystal oscillators.

U.S. Patent No. 5,325,313 to Herbert et al. teaches a system for measuring timepiece beat interval accuracy.

U.S. Patent No. 4,708,491 to Luitje teaches a time of day clock.

JP Patent Application Publication No. 10-020052 to Nagaoka teaches a time correction method and device therefor.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (571)272-2226. The examiner can normally be reached on Monday through Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)272-2216. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeffrey R. West
Examiner – AU 2857

March 6, 2006